UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,103	01/27/2004	Willie W. Ng	B-4585 619759-6	2200

7590 08/11/2006

Richard P. Berg, ESQ.
c/o LADAS & PARRY
Suite 2100
5670 Wilshire Boulevard
Los Angeles, CA 90036-5679

EXAMINER	
LANE, JEFFREY D	
ART UNIT	**PAPER NUMBER**
2828	

DATE MAILED: 08/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/766,103	NG ET AL.
	Examiner	Art Unit
	Jeffrey D. Lane	2828

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 04 May 2006.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1,3-11,13-17 and 19-26 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-23 is/are rejected.

7)☒ Claim(s) 24-26 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 27 January 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 4/11/06; 1/31/06
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 25 is objected to because of the following informalities: "the micro resonator is has a body of comprising GaInAsP/InP semiconductor materials"; for examination purposes it will be interpreted as "...the micro resonator **has** a body **comprising** GaInAsP/InP semiconductor materials". Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1, 10, and 17 (amended; and their dependants 1-26) are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The following are new limitations not found "silicon substrate", "the gain element having a body of material different than said integration platform", "a silica waveguide", the "tunable microresonator having a body of material different than said silica waveguide", "fixed grating in said integration platform"; "UV-induced sampled grating", "sampled grating fabricated on or over a silica waveguide"

4. Claims 25 and 26 (new) are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. "Microresonator has a body comprising GaInAsP/InP" "microresonator from III-V semiconductor material".

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frick (US 2004/0120638) in view of Painter et al. (US 2002/0122615).

As for claim 17, Frick discloses A method of configuring a transmitter to transmit one of a plurality of wavelengths (See Paragraph [0089]), said method comprising the steps of: passing a spectrum of light from a gain element (See Paragraph [0089]) into a tunable Fabry-Perot etalon or microdisk microresonator (1102, fig 32, also see abstract); selecting a first portion of said spectrum of light to be transmitted by said transmitter (see column 3 line 67 – column 4 line 4); and electrically tuning said tunable

Fabry-Perot etalon or microdisk microresonator (950, fig 32; changing the electrical properties is a form of electrical tuning), wherein a second portion of said spectrum of light is to be transmitted by said transmitter a silica wave guide (See Paragraph [0086]; Quartz is crystallized silica, "Quartz" http://en.wikipedia.org/). However Frick does not disclose having a grating. Painter discloses, "It may be desirable to provide one or more layers of a multi-layer waveguide <optical path> structure with a grating. Such a grating may serve to provide lateral confinement for a support optical mode, and may also cause the waveguide to exhibit desirable dispersive properties."(See Paragraph [0191]). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a grating on the on the optical path to provide lateral confinement.

7. Claims 1, 3-9, 17, 19, 20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Orenstein et al. (US 6,940,878) in view of Soref et al. (US 6,195,187) and Bilodeau, F., et al. ("An All-Fiber Dense-Wavelength-Division Multiplexer/Demultiplexer Using Photoimprinted Bragg Gratings," IEEE Photonics TechnologyLetters. Vol. 7, No. 4, pp 388-390 (April 1995).)

As for claim 1, Orenstein discloses in figure 3A, A reconfigurable laser transmitter comprising: an integration platform having a substrate (fig 3A); a gain element (See column 3 lines 36-37) having an optical output, the gain element having a body of material different than said integrating platform, being disposed on said integration platform (for the active layer to lase it would have to have at least a change in dopant level and therefore would have a different body of material); a first optical path

(the path guided by "Laser WG") receiving optical output from said gain element, said first optical path comprising a waveguide ("Laser WG") within said integration platform; a tunable microresonator "A" optically coupled with said first optical path; a second optical path coupled with said tunable microresonator A, said second optical path comprising a waveguide (between the "Bragg gratings" and the "Phase"); and a fixed grating "B" in said integration platform (See 5/4-5; the grating is on the waveguide and therefore in the platform) and coupled with said second optical path. Orenstein does not disclose the platform is formed of silicon nor the waveguides are of silica nor the resonators are of a material different than the waveguide. Soref discloses, "An important requirement of the ET crossconnect is to couple all rings to a passive waveguide network that is optically transparent at the resonant wavelengths of the microrings (unlike the OFF rings which are not transparent). There are two ways to accomplish this: (1) construct the network waveguides out of a different alloy composition than the rings." (8/9-15) Bilodeau discloses, "The process of photoimprinting Bragg gratings in optical fibers and silica-on-silicon waveguides using glass photosensitivity [I] is a proven flexible means for fabricating, narrowband reflectors" (pg 388 1st column 1st paragraph under "I. Introduction"). Therefore it would have been obvious to one of ordinary skill at the time of the invention to use silica waveguide with a silicon substrate for flexibility to make the waveguides and the resonator out of different material to allow crossconnect.

As for claim 3, Orenstein does not disclose that the microresonator is a microdisk. Soref discloses, "To alleviate this contact problem, we have designed a

microdisk resonator that is optically equivalent to the microring resonator. The microdisk has a more favorable contact geometry." (5/60-64) Therefore it would have been obvious to one of ordinary skill at the time of the invention to use a microdisk instead of a microring in Orenstein's transmitter because it has a more favorable contact geometry.

As for claim 4 the microdisk would have to be attached to the integration platform to function, therefore the limitations of this claim are met.

As for claim 5, the guides are made out of silica as discussed in claim 1 above and a property of silica is noted by Conradi, "An advantage of writing the frequency into the silica fiber is that the silica has a small coefficient of thermal expansion (~5.times.10^{-7} /° C.) and the resonant Bragg frequency changes with the same dependence. In particular, the center frequency of the Bragg grating in silica will normally vary by less than 10 GHz (0.1 nm) over a 100° C. range" (Column 3 lines 2-7). Therefore the limitations of the claim are met.

As for claim 6 and 7, Orenstein discloses, "Here, the tuning is performed only by a very slight tuning of the rings relatively to each other to apply the Vernier effect, and due to this small tuning, only a very small amount of power (**current**) is required." (3/60-63)

As for claim 8, Orenstein discloses, "This configuration is generally similar to the prior art SGDBR or SSGDBR structures, but differs therefrom in that one of the two gratings (FIG. 3A) or both of them (FIG. 3B) is replaced by microring resonator(s)." (3/45-48)

As for claim 9, Orenstein discloses, "The two laser mirrors are made of sampled (SGDBR) or super structure gratings (SSGDBR) each to generate a spectral sequence of high transmission peaks ... a spectral peak of one mirror overlaps the spectral line of the other (Vernier tuning)" (1/31-37)

As for claim 17, Orenstein discloses, in figure 3A, A method of configuring a transmitter to transmit one of a plurality of wavelengths (see column 3 line 67 – column 4 line 4), said method comprising the steps of: passing a spectrum of light from a gain element (See column 3 lines 36-37) into a tunable microresonator A; selecting a first portion of said spectrum of light to be transmitted by said transmitter (see column 3 line 67 – column 4 line 4); and electrically tuning said tunable microresonator (see column 3 lines 60-63), wherein a second portion of said spectrum of light is to be transmitted by said transmitter, however Orenstein does not disclose using silica waveguides or microdisk resonators. Soref discloses, "To alleviate this contact problem, we have designed a microdisk resonator that is optically equivalent to the microring resonator. The microdisk has a more favorable contact geometry." (Column 5 lines 60-64) Bilodeau discloses, "The process of photoimprinting Bragg gratings in optical fibers and silica-on-silicon waveguides using glass photosensitivity [l] is a proven flexible means for fabricating, narrowband reflectors" (pg 388 1st column 1st paragraph under "I. Introduction") Therefore it would have been obvious to one of ordinary skill at the time of the invention to use a microdisk instead of a microring in Orenstein's transmitter

because it has a more favorable contact geometry and to use silica wave guide with a silicon substrate for flexibility.

As for claim 19, Orenstein discloses, "Here, the tuning is performed only by a very slight tuning of the rings relatively to each other to apply the Vernier effect, and due to this small tuning, only a very small amount of power (**current**) is required." (Column 3 lines 60-63)

As for claim 20, Orenstein discloses in figure 3A, the step of selecting a first portion further comprises the step of coupling a fixed optical grating B to said tunable microresonator A.

As for claim 22, Orenstein discloses in figure 3B, A method of configuring a transmitter to transmit one of a plurality of wavelengths (see column 3 line 67 – column 4 line 4), said method comprising the steps of: passing a spectrum of light from a gain element (See column 3 lines 36-37) into a tunable microresonator A; selecting a first portion of said spectrum of light to be transmitted by said transmitter (see column 3 line 67 – column 4 line 4); and electrically tuning said tunable microresonator (see column 3 lines 60-63), wherein a second portion of said spectrum of light is to be transmitted by said transmitter; wherein the step of selecting a first portion further comprises the step of coupling a fixed optical-resonator filter B to said tunable microresonator A. The optical-resonator filter property of microring B of figure 3B is shown in Fig 4A and 4B.

8. Claims 10, 11, and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Orenstein in view of Soref et al. (US 6,195,187) and Bilodeau, F., et

al. ("An All-Fiber Dense-Wavelength-Division Multiplexer/Demultiplexer Using Photoimprinted Bragg Gratings," IEEE Photonics TechnologyLetters. Vol. 7, No. 4, pp 388-390 (April 1995).) and Madsen et al. ("Planar Waveguide Optical Spectrum Analyzer Using a UV-Induced Grating" IEEE Journal of Selected Topics in Quantum Electronics. Vol. 4, No. 6, pp 925-929, Nov/Dec 1998.)

As for claim 10, Orenstein discloses in figure 3A, A method for reconfiguring a wavelength of a laser comprising the steps of: providing an integration platform (fig 3A); coupling a tunable microresonator A having a passband to a fixed grating having a plurality of reflection peaks (See column 1 lines 31-37) via waveguide ("Laser WG") in said integration platform, said wave guide including a sampled grating (3/45-48); heterogeneously mounting the tunable microresonator on said integration platform, and tuning said tunable microresonator "A" such that the passband of said tunable microresonator A is aligned with one of said plurality of reflection peaks of said fixed grating (See column 1 lines 31-37). Orenstein does not disclose that the platform is formed of silicon nor the waveguides are of silica nor the gratings are UV-induced nor the resonators are of a material different than the waveguide. Soref discloses, "An important requirement of the ET crossconnect is to couple all rings to a passive waveguide network that is optically transparent at the resonant wavelengths of the microrings (unlike the OFF rings which are not transparent). There are two ways to accomplish this: (1) construct the network waveguides out of a different alloy composition than the rings." (8/9-15) Bilodeau discloses, "The process of photoimprinting Bragg gratings in optical fibers and silica-on-silicon waveguides using

glass photosensitivity [I] is a proven flexible means for fabricating, narrowband reflectors" (pg 388 1st column 1st paragraph under "I. Introduction"). Madsen discloses, "The simplicity of the UV-induced grating, which also focuses the light avoids the critical fabrication required by these other approaches." (Pg 925 1st Column 1st paragraph). Therefore it would have been obvious to one of ordinary skill at the time of the invention to use silica waveguide with a silicon substrate for flexibility to make the waveguides and the resonator out of different material to allow crossconnect and UV grating to have simpler fabrication.

As for claim 11, Orenstein does not disclose that the microresonator is a microdisk. Soref discloses, "To alleviate this contact problem, we have designed a microdisk resonator that is optically equivalent to the microring resonator. The microdisk has a more favorable contact geometry." (5/60-64) Therefore it would have been obvious to one of ordinary skill at the time of the invention to use a microdisk instead of a microring in Orenstein's transmitter because it has a more favorable contact geometry.

As for claim 13 and 16, Orenstein discloses, "Here, the tuning is performed only by a very slight tuning of the rings relatively to each other to apply the Vernier effect, and due to this small tuning, only a very small amount of power (**current**) is required." (3/60-63).

As for claim 14, the guides are made out of silica as discussed in claim 10 above and a property of silica is noted by Conradi, "An advantage of writing the frequency into the silica fiber is that the silica has a small coefficient of thermal expansion (~5.times.10^{-7} /° C.) and

the resonant Bragg frequency changes with the same dependence. In particular, the center frequency of the Bragg grating in silica will normally vary by less than 10 GHz (0.1 nm) over a 100° C. range" (Column 3 lines 2-7). Therefore the limitations of the claim are met.

Claim 15 is not further limiting of claim 10 therefore the same rational is used to reject claim 15 as claim 10.

9. Claims 17, 19, 20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Orenstein et al. (US 6,940,878) in view of Soref et al. (US 6,195,187) and in view of Conradi (US 6,061,369)

As for claim 17, Orenstein discloses, in figure 3A, A method of configuring a transmitter to transmit one of a plurality of wavelengths (see column 3 line 67 – column 4 line 4), said method comprising the steps of: passing a spectrum of light from a gain element (See column 3 lines 36-37) into a tunable microresonator A; selecting a first portion of said spectrum of light to be transmitted by said transmitter (see column 3 line 67 – column 4 line 4); and electrically tuning said tunable microresonator (see column 3 lines 60-63), wherein a second portion of said spectrum of light is to be transmitted by said transmitter, however Orenstein does not disclose using silica waveguides or microdisk resonators. Soref discloses, "To alleviate this contact problem, we have designed a microdisk resonator that is optically equivalent to the microring resonator. The microdisk has a more favorable contact geometry." (Column 5 lines 60-64) Conradi discloses, "An advantage of writing the frequency into the silica fiber is that the silica

has a small coefficient of thermal expansion (~5x10^{-7} /° C.) and the resonant Bragg frequency changes with the same dependence. In particular, the center frequency of the Bragg grating in silica will normally vary by less than 10 GHz (0.1 nm) over a 100° C. range" (Column 3 lines 2-7). Therefore it would have been obvious to one of ordinary skill at the time of the invention to use a microdisk instead of a microring in Orenstein's transmitter because it has a more favorable contact geometry and to use silica to fabricate the grating because it has a small coefficient of thermal expansion.

As for claim 19, Orenstein discloses, "Here, the tuning is performed only by a very slight tuning of the rings relatively to each other to apply the Vernier effect, and due to this small tuning, only a very small amount of power (**current**) is required." (Column 3 lines 60-63)

As for claim 20, Orenstein discloses in figure 3A, the step of selecting a first portion further comprises the step of coupling a fixed optical grating B to said tunable microresonator A.

As for claim 22, Orenstein discloses in figure 3B, A method of configuring a transmitter to transmit one of a plurality of wavelengths (see column 3 line 67 – column 4 line 4), said method comprising the steps of: passing a spectrum of light from a gain element (See column 3 lines 36-37) into a tunable microresonator A; selecting a first portion of said spectrum of light to be transmitted by said transmitter (see column 3 line 67 – column 4 line 4); and electrically tuning said tunable microresonator (see column 3 lines 60-63), wherein a second portion of said spectrum of light is to be transmitted by said transmitter; wherein the step of selecting a first portion further comprises the step

of coupling a fixed optical-resonator filter B to said tunable microresonator A. The optical-resonator filter property of microring B of figure 3B is shown in Fig 4A and 4B.

10. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Orenstein and Soref and Bilodeau or Conradi (See Bullets 7 and 9) as applied to claim 17 above, and further in view of Madsen et al. ("Planar Waveguide Optical Spectrum Analyzer Using a UV-Induced Grating" IEEE Journal of Selected Topics in Quantum Electronics. Vol. 4, No. 6, pp 925-929, Nov/Dec 1998.).

As for claim 21, Orenstein and Soref and Bilodeau or Conradi discloses all that pertains to claim 17 (See Bullets 7 and 9). However they do not explicitly disclose using UV grating. Madsen discloses, "The simplicity of the UV-induced grating, which also focuses the light avoids the critical fabrication required by these other approaches." (Pg 925 1st Column 1st paragraph). Therefore it would have been obvious to use UV-induced grating to simplify fabrication.

11. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Orenstein and Soref and Bilodeau or Conradi (See Bullets 7 and 9) as applied to claim 17 above, and further in view of Pelekhaty (US 6,215,592).

As for claim 23, Orenstein and Soref and Bilodeau or Conradi discloses all that pertains to claim 17 (See Bullets 7 and 9). However they do not disclose operating in frequencies set according to an international standard. Pelekhaty discloses, "The

particular wavelength designations may be chosen to correspond to the ITU channel designation grid to facilitate operability with common network elements." (Column 4 lines 56-58). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to choose a wavelength with in the ITU channel designation to facilitate operability with network elements.

12. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frick (US 2004/0120638) and Painter et al. (US 2002/0122615) (See Bullet 6) as applied to claim 17 above, and further in view of Pelekhaty (US 6,215,592).

As for claim 23, Frick and Painter disclose all that pertains to claim 17 (See Bullet 6). However they do not disclose operating in frequencies set according to an international standard. Pelekhaty discloses, "The particular wavelength designations may be chosen to correspond to the ITU channel designation grid to facilitate operability with common network elements." (Column 4 lines 56-58). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to choose a wavelength with in the ITU channel designation to facilitate operability with network elements.

Allowable Subject Matter

13. Claims 24-26 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter:

As for claim 24, there is not found a reference of record that teaches using a GaInAsP/InP semiconductor gain element with silicon substrate and silica waveguides with a fixed grating with all the accompanying limitations.

As for claim 25, there is not found a reference of record that teaches using a GaInAsP/InP semiconductor microresonator with silicon substrate and silica waveguides with a fixed grating with all the accompanying limitations.

As for claim 26 there is not found a reference of record that teaches using a silicon integrated platform and a tunable Fabry-Perot etalon or microdisk microresonator from a III-V semiconductor material on or in said silicon integration platform with silica waveguides and a sampled grating.

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Response to Arguments

16. Applicant's arguments filed 5/4/06 have been fully considered but they are not persuasive.

There is no argument made against the rejection based on Frick in view of Painter, therefore the examiner takes the position that this omission is an admission that Frick in view of Painter did fully disclose claims 1, 3, and 4 as pertains to 35 USC 103 as originally filed.

On review the examiner notes that Orienstien et al. explicitly teach using a microresonator and grating and even claimed the use of gratings in their device (See claim 10)

The argument that there is no teaching of how to manufacture Orenstein's invention out of Silica is not persuasive because Tishinin et al. ("Vertical Resonant Couplers with Precise Coupling Efficiency Control Fabricated by Wafer Bonding", IEEE Photonics Technology Letters, Vol 11, No 8 pgs 1003-1005, Aug 1999) discloses a method of manufacture that enables the combination. Also it is noted Orienstien does not disclose the materials used as essential to his invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey D. Lane whose telephone number is (571) 272-1676. The examiner can normally be reached on Monday thru Friday 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeffrey Lane

Jeffrey D Lane
Examiner
Art Unit 2828

JDL

MINSUN OH HARVEY
PRIMARY EXAMINER